CLAIMS:

1. A method of acquiring a remote node of a plurality of remote nodes in a satellite communication network, said method comprising steps of:

sending a first acquisition command from a hub to the remote, said first acquisition command

instructing the remote to send an acquisition response, and

including a first frequency;

sending a first acquisition response based on the first acquisition command from the remote to the hub using the first frequency; and

sending a second acquisition command from the hub before receiving the first acquisition response at the hub.

2. The method of claim 1, wherein the second acquisition command identifies one of the remote and another remote for acquisition and includes one of the first frequency and a second frequency.

3. The method of claim 1, further comprising steps of:

detecting a symbol offset in the first response at the hub; and

sending a symbol offset correction factor from the hub to the plurality of remotes, said correction factor used by the remote in a subsequent transmission from the remote to the hub to correct the symbol offset detected in the detecting step.

4. The method of claim 1, further comprising a step of:

sending at least a third acquisition command from the hub to the plurality of remotes before receiving the first response at the hub.

5. The method of claim 1, further comprising sending the second acquisition command from the hub within a latency time of sending the first acquisition command from the hub,

wherein the latency time is about twice a time elapsed between sending a message from the hub and receiving the message at the remote.

6. The method of claim 1, further comprising steps of:

selecting a next acquisition remote according to at least one of a round robin algorithm, a least recently used algorithm, and a priority algorithm; and

selecting a next frequency based on an offset frequency of a previous acquisition command,

wherein the second acquisition command identifies the next acquisition remote for acquisition and includes the next frequency.

7. The method of claim 1, wherein the first frequency includes a frequency offset that informs the remote to transmit a response based on a predetermined nominal remote transmit frequency and the frequency offset.

8. A method of acquiring a remote that is one of a plurality of remotes in a synchronous satellite communication network, said method comprising steps of:

transmitting a sequence of downlink messages from a hub to the remote with a common time interval between the start of each downlink message, said common time interval being less than about twice a time elapsed between sending a message from the hub and receiving the message at the remote, wherein

a first downlink message in the sequence includes a first acquisition command for the remote to transmit an acquisition response, and

a second downlink message immediately following the first downlink message in the sequence of downlink messages includes a second acquisition command for the remote to transmit an acquisition response; and

receiving a response to the first downlink message at the hub after sending the second downlink message from the hub.

9. The method of claim 8, further comprising steps of:

allocating time for a sequence of uplink frames from the remote to the hub with the common time interval between the start of each uplink frame; and

allocating time for at least one data communication time slot and at least one acquisition time slot within each uplink frame,

wherein each downlink message includes a burst time plan instructing the remote to transmit a data burst within the at least one data communication slot of a subsequent uplink frame and instructing at least one of the plurality of remotes to transmit an acquisition response within the at least one acquisition slot.

10. The method of claim 9, wherein each burst time plan includes station keeping parameters for at least two of the remotes and the burst time plan instructs at least one of the at least two remotes to transmit a data burst or an acquisition response according to the station keeping parameters.

11. The method of claim 10, wherein the station keeping parameters include at least one of a frequency, a symbol offset, and a power level.

12. A hub apparatus configured to acquire a remote node of a plurality of remote nodes in a satellite communication network, said hub apparatus comprising:

an acquisition unit configured to send a first acquisition command to the remote, said first acquisition command configured to

instruct the remote to send an acquisition response, and

include an indication of a first frequency; and

a receiving unit configured to receive a first acquisition response based on the first acquisition command from the remote using the first frequency, wherein

said acquisition unit is further configured to send a second acquisition command before the receiving unit receives the first acquisition response.

13. The hub apparatus of claim 12, wherein the second acquisition command identifies one of the remote and another remote for acquisition and includes one of the first frequency and a second frequency.

14. The hub apparatus of claim 12, further comprising:

a detecting unit configured to detect a symbol offset in the first response; and

an offset sending unit configured to sent a symbol offset correction factor to the plurality of remotes, said correction factor used by the remote in a subsequent transmission from the remote to correct the detected symbol offset.

15. The hub apparatus of claim 12, wherein the acquisition unit is further configured to send at least a third acquisition command to the plurality of remotes before the receiving unit receives the first response.

16. The hub apparatus of claim 12, wherein

the acquisition unit is further configured to send the second acquisition command within a latency time of sending the first acquisition command, and

the latency time is about twice a time elapsed between sending a message and receiving the message at the remote.

17. The hub apparatus of claim 12, further comprising:

a next remote selecting unit configured to select a next acquisition remote according to at least one of a round robin algorithm, a least recently used algorithm, and a priority algorithm; and

a next frequency selecting unit configured to select a next frequency based on an offset frequency of a previous acquisition command,

wherein the second acquisition command identifies the next acquisition remote for acquisition and includes the next frequency.

18. The hub apparatus of claim 12, wherein the indication of the first frequency includes a frequency offset that informs the remote to transmit a response based on a predetermined nominal remote transmit frequency and the frequency offset.

19. A hub apparatus configured to acquire a remote that is one of a plurality of remotes in a synchronous communication network, said hub apparatus comprising:

a transmitting unit configured to transmit a sequence of downlink messages to the remote with a common time interval between the start of each downlink message, said

common time interval being less than about twice a time elapsed between transmitting a message from the transmitting unit and receiving the message at the remote,

a first downlink message in the sequence includes a first acquisition command for the remote to transmit an acquisition response, and

a second downlink message immediately following the first downlink message in the sequence of downlink messages includes a second acquisition command for the remote to transmit an acquisition response; and

a receiving unit configured to receive a response to the first downlink message after the transmitting unit sends the second downlink message.

20. The hub apparatus of claim 19, wherein the receiving unit is further configured to allocate time for a sequence of uplink frames from the remote with the common time interval between the start of each uplink frame and allocate time for at least one data communication time slot and at least one acquisition time slot within each uplink frame,

wherein each downlink message includes a burst time plan instructing the remote to transmit a data burst within the at least one data communication slot of a subsequent uplink frame and instructing at least one of the remotes to transmit an acquisition response within the at least one acquisition slot.

21. The hub apparatus of claim 20, wherein each burst time plan includes station keeping parameters for at least two of the remotes and the burst time plan instructs at least one of the at least two remotes to transmit a data burst or an acquisition response according to the station keeping parameters.

22. The hub apparatus of claim 21, wherein the station keeping parameters include at least one of a frequency, a symbol offset, and a power level.

23. A remote apparatus in a satellite communication network, said remote apparatus comprising:

a receiving unit configured to receive a first acquisition command from a hub, said first acquisition command including an instruction to send a first acquisition response to the hub using a first frequency;

a response sending unit configured to send the first acquisition response to the hub based on the first acquisition command using the first frequency,

wherein the first acquisition response is received at the hub after the hub sends a second acquisition command.

24. The remote apparatus of claim 23, wherein the second acquisition command identifies one of the remote apparatus and another remote apparatus for acquisition and includes one of the first frequency and a second frequency.

25. The remote apparatus of claim 23, wherein the hub is configured to detect a symbol offset in the first response and send a symbol offset correction factor to the remote,

said remote apparatus further comprising a correction unit configured to use the symbol offset correction factor in a subsequent transmission to the hub to correct the symbol offset detected by the hub.

26. The remote apparatus of claim 25, wherein the receiving unit is further configured to receive a frequency offset in the first acquisition command, and the response

sending unit is further configured to send the first acquisition response based on the received frequency offset and a predetermined nominal remote transmit frequency.

27. A remote apparatus in a synchronous satellite communication network, said remote apparatus comprising:

a receiving unit configured to receive a sequence of downlink messages from a hub with a common time interval between the start of each downlink message, said common time interval being less than about twice a time elapsed between sending a message from the hub and receiving the message at the receiving unit;

a response sending unit configured to send a first acquisition response to the hub based on a first acquisition command included in a first downlink message in the sequence and send a second acquisition response to the hub based on a second acquisition command included in a second downlink message in the sequence,

wherein the first acquisition response is received at the hub after the hub sends the second downlink message from the hub.

28. The remote apparatus of claim 27, wherein the response sending unit is further configured to allocate time for a sequence of uplink frames to the hub with the common time interval between the start of each uplink frame and allocate time for at least one acquisition time slot within a subsequent uplink frame and send an acquisition response to the hub within the at least one acquisition slot based on a burst time plan in the first downlink message that identifies the at least one acquisition time slot.

29. The remote apparatus of claim 28, wherein the response sending unit is further configured to allocate time for at least one data communication time slot within each uplink

frame and send a data burst within the at least one data communication slot of a subsequent uplink frame based on the burst time plan in the first downlink message that identifies the at least one data communication slot.

30. The remote apparatus of claim 29, wherein the burst time plan includes station keeping parameters for the remote and another remote in the communication network and the response sending unit is further configured to send the data burst or the acquisition response based on the station keeping parameters.

31. The remote apparatus of claim 30, wherein the station keeping parameters include at least one of a frequency, a symbol offset, and a power level.

32. A computer program product having computer program instructions which when executed by a computer cause the computer to perform the following steps:

sending a first acquisition command from a hub to a remote, said first acquisition command

instructing the remote to send an acquisition response, and

including a first frequency;

sending a first acquisition response based on the first acquisition command from the remote to the hub using the first frequency; and

sending a second acquisition command from the hub before receiving the first acquisition response at the hub.

33. The computer program product of claim 32, wherein the second acquisition command identifies one of the remote and another remote for acquisition and includes one of the first frequency and a second frequency.

34. The computer program product of claim 32, further storing instructions causing the computer to perform steps of:

detecting a symbol offset in the first response at the hub; and

sending a symbol offset correction factor from the hub to the remote, said correction factor used by the remote in a subsequent transmission from the remote to the hub to correct the detected symbol offset.

35. The computer program product of claim 32, further storing instructions causing the computer to perform a step of:

sending at least a third acquisition command from the hub to the remote before receiving the first response at the hub.

36. The computer program product of claim 32, further storing instructions causing the computer to perform a step of:

sending the second acquisition command from the hub within a latency time of sending the first acquisition command from the hub,

wherein the latency time is about twice a time elapsed between sending a message from the hub and receiving the message at the remote.

37. The computer program product of claim 32, further storing instructions causing the computer to perform steps of:

selecting a next acquisition remote according to at least one of a round robin algorithm, a least recently used algorithm, and a priority algorithm; and

selecting a next frequency based on an offset frequency of a previous acquisition command,

wherein the second acquisition command identifies the next acquisition remote for acquisition and includes the next frequency.

38. The computer program product of claim 32, wherein the first frequency includes a frequency offset that informs the remote to transmit a response based on a predetermined nominal remote transmit frequency and the frequency offset.

39. A computer program product having computer program instructions which when executed by a computer cause the computer to perform the following steps of acquiring a remote that is one of a plurality of remotes in a synchronous satellite communication network:

transmitting a sequence of downlink messages from a hub to the remote with a common time interval between the start of each downlink message, said common time interval being less than about twice a time elapsed between sending a message from the hub and receiving the message at the remote,

a first downlink message in the sequence includes a first acquisition command for the remote to transmit an acquisition response, and

a second downlink message immediately following the first downlink message in the sequence of downlink messages includes a second acquisition command for the remote to transmit an acquisition response; and

receiving a response to the first downlink message at the hub after sending the second downlink message from the hub.

40. The computer program product of claim 39, further storing instructions causing the computer to perform steps of:

allocating time for a sequence of uplink frames from the remote to the hub with the common time interval between the start of each uplink frame; and

allocating time for at least one data communication time slot and at least one acquisition time slot within each uplink frame,

wherein each downlink message includes a burst time plan instructing the remote to transmit a data burst within the at least one data communication slot of a subsequent uplink frame and instructing at least one of the remotes to transmit an acquisition response within the at least one acquisition slot.

41. The computer program product of claim 40, wherein each burst time plan includes station keeping parameters for at least two of the remotes and the burst time plan instructs at least one of the at least two remotes to transmit a data burst or an acquisition response according to the station keeping parameters.

42. The computer program product of claim 41, wherein the station keeping parameters include at least one of a frequency, a symbol offset, and a power level.

43. A communication system comprising:

a remote node; and

a hub configured to send a first acquisition command to the remote node, said first acquisition command

instructing the remote to send an acquisition response, and

including a first frequency,

said remote node configured to send a first acquisition response based on the first acquisition command to the hub using the first frequency, and

said hub further configured to send a second acquisition command before receiving the first acquisition response.

44. The system of claim 43, wherein the second acquisition command identifies one of the remote node and another remote node for acquisition and includes one of the first frequency and a second frequency.

45. The system of claim 43, wherein the hub is further configured to detect a symbol offset in the first response and send a symbol offset correction factor to the remote node, and the remote node is further configured to send a subsequent transmission to the hub using said correction factor to correct the detected symbol offset.

46. The system of claim 43, wherein the hub is further configured to send at least a third acquisition command to the remote node before receiving the first response.

47. The system of claim 43, wherein the hub is further configured to send the second acquisition command within a latency time of sending the first acquisition command,

wherein the latency time is about twice a time elapsed between sending a message from the hub and receiving the message at the remote node.

48. The system of claim 43, wherein the hub is further configured to select a next acquisition remote according to at least one of a round robin algorithm, a least recently used algorithm, and a priority algorithm and select a next frequency based on an offset frequency of a previous acquisition command,

wherein the second acquisition command identifies the next acquisition remote for acquisition and includes the next frequency.

49. The system of claim 43, wherein the first frequency includes a frequency offset that informs the remote node to transmit a response based on a predetermined nominal remote transmit frequency and the frequency offset.

50. A synchronous satellite communication system comprising:

a remote; and

a hub configured to transmit a sequence of downlink messages to the remote with a common time interval between the start of each downlink message, said common time interval being less than about twice a time elapsed between sending a message from the hub and receiving the message at the remote,

a first downlink message in the sequence including a first acquisition command for the remote to transmit an acquisition response, and

a second downlink message immediately following the first downlink message in the sequence of downlink messages including a second acquisition command for the remote to transmit an acquisition response,

wherein a response to the first downlink message is received at the hub after sending the second downlink message from the hub.

51. The system of claim 50, wherein the hub is further configured to allocate time for a sequence of uplink frames from the remote to the hub with the common time interval between the start of each uplink frame and allocate time for at least one data communication time slot and at least one acquisition time slot within each uplink frame,

wherein each downlink message includes a burst time plan instructing the remote to transmit a data burst within the at least one data communication slot of a subsequent uplink frame and instructing at least one of the remotes to transmit an acquisition response within the at least one acquisition slot.

52. The system of claim 51, wherein each burst time plan includes station keeping parameters for at least two remotes and the burst time plan instructs at least one of the at least two remotes to transmit a data burst or an acquisition response according to the station keeping parameters.

53. The system of claim 52, wherein the station keeping parameters include at least one of a frequency, a symbol offset, and a power level.